

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 09/556,349

Atty. Docket No. CA1055
PATENT APPLICATION

REMARKS

Responsive to the Examiner's objection to claims 39 and 44-46, and to his rejection of those claims under the second paragraph of 35 U.S.C. § 112, Applicants have amended these claims to change their dependencies per the Examiner's indication. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw this objection and this rejection.

Claims 1-17 and 31-47 are pending in the subject application, claims 18-30 and 48-72 having been cancelled from this application and filed in a co-pending divisional application, bearing Application No. 10/691,222. Claims 1-5, 11-12, 31-35, and 41-43 stand rejected under 35 U.S.C. § 102(e) as anticipated by USP 5,956,026 (Ratakonda). Claims 6-9 and 36-39 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ratakonda and further in view of USP 6,574,378 (Lim). It appears that the Examiner also intended to reject claims 17 and 47 on this prior art combination, since the Examiner discusses these claims in this part of the rejection. Claims 10 and 40 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ratakonda in view of USP 6,535,639 (Uchihachi). Claims 13-16 and 43 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Ratakonda, and further in view of USP 6,122,628 (Castelli). Claims 44-46 stand rejected for the same reasons as claims 14-16 and claim 38. Applicants respectfully traverse these prior art rejections, and request reconsideration and allowance of the claims in view of the following arguments.

Independent claims 1 and 31 recite a method or program for summarizing input video sequence content by first identifying a cluster of frames which correspond to a most static one of

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a plurality of video segments into which the frames of the input video sequence are clustered. A content value then is computed in that selected frame cluster. Finally, that computed content value is used to cluster remaining frames in the input video sequence.

In reading claims 1 and 31 on Ratakonda, the Examiner has taken Ratakonda's teachings out of order. In claims 1 and 31, each claimed item (a)-(c) relies on an earlier element for antecedent basis. Therefore, the sequence of the claimed method or program is (a), then (b), then (c).

Looking more closely at the paragraph bridging pages 3 and 4 of the Office Action, the Examiner has read a portion of Ratakonda's minimization procedure (col. 6, lines 55-60 and col. 7, lines 25-33) on the claimed selection of a frame cluster corresponding to a most static of the video segments. The Examiner then reads an earlier portion of Ratakonda (col. 6, lines 26-44) which describes computing a cumulative action measure C, on the later-claimed computation of content value in the selected frame cluster. Thus, while in Ratakonda the cumulative action measure C is computed for each shot, and then the keyframes that minimize the action within corresponding contiguous sets of video frames is carried out, in the claimed invention the selection of the most static one of the video segments is carried out, and then the content value in the selected frame cluster is carried out.

The Ratakonda portion that the Examiner selected to read on item (b) in claims 1 and 31 comes before the portion that the Examiner selected to read on item (a) in claims 1 and 31, and

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does not seem to Applicants to be in the same sequence as claimed in the present application. Therefore, the Examiner's reading of Ratakonda on the claims must fail.

Applicants do not understand the Examiner's reading of the last item (c) in claims 1 and 31 on col. 7, lines 25-33 on Ratakonda, nor do Applicants understand how the portion of Ratakonda at col. 10, lines 35-42 corresponds to that portion at col. 7. Item (c) in claims 1 and 31 recites the use of a computed content value from item (b) to cluster remaining frames in the input video sequence. Ratakonda col. 7, lines 25-33 talks about a best stair case approximation, shown in Fig. 6. Ratakonda's use of this best stair case approximation does not seem to Applicants to correspond to the clustering of remaining frames in an input video sequence, as claimed. The portion of Ratakonda at col. 10 talks about selection of keyframes in subsequent clusters, but the relation to the discussion at col. 7 is unclear, and seems disjointed, as if the Examiner were selecting bits and pieces of Ratakonda like chapters out of a book, irrespective of any relation of the discussion in those chapters to each other, and reading the claims on those portions. Applicants submit that such an approach is improper, and in the present case results in a failed reading of the claims on Ratakonda in any event.

For the foregoing reasons, Applicants submit that claims 1 and 31, and hence their respective dependencies claims 2-16 and 32-46, are patentable.

Independent claims 17 and 47 in the present application contain the same recitation as independent claims 1 and 31, and therefore are patentable for the same reasons that claims 17 and 47 are patentable. However, claims 17 and 47 add several features that are not in claims 1

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and 31. Among these features are: the selection of frames from an input video sequence; the creation of a feature frame matrix using those selected frames; the use of singular value decomposition to obtain a matrix, representing the video sequence, in a refined feature space; and the selection of cluster in that refined feature space corresponding to a most static video segment.

The Examiner cites Lim for the teaching of singular value decomposition, and combines Lim with Ratakonda to reject claims 17 and 47. Applicants do not dispute that singular value decomposition was known. However, Lim teaches no more than what Applicants have acknowledged. Lim does not teach or even remotely suggest the application of singular value decomposition in the context claimed in claims 17 and 47 (or claims 6-9 and 36-39, for that matter).

In paragraph 21 bridging pages 5 and 6 of the Office Action, the Examiner has said that it would have been obvious to use singular value decomposition in order to reduce the dimensionality and possibly the noise in the spatial aggregation map to produce a coded description of a visual document, referring to Lim col. 9, lines 29-33. However, Lim's use of singular value decomposition is very different from the claimed application of singular value decomposition in claims 6-9, 17, 36-39, and 47. The passage from Lim which the Examiner identifies is silent about using singular value decomposition to obtain a refined feature space representation of an input video sequence (claims 6, 17, 36, and 47); or arranging frames into feature frame matrix and performing the singular value decomposition on that matrix (claims 8,

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17, 38, and 47). Therefore, Applicants submit that claims 6-9, 17, 36-39, and 47 are patentable for these additional reasons as well.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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23493

CUSTOMER NUMBER

Date: April 19, 2004

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this Amendment Under 37 C.F.R. § 1.111 is being facsimile transmitted to the U.S. Patent and Trademark Office this 19th day of April, 2004.

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